What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. A copper interconnect structure providing electrical connection in a semiconductor substrate, said copper interconnect structure comprising:

a conductive plug;

a copper conductor electrically coupled to said conductive plug;

an aluminum nitride layer formed on an upper surface portion of said copper conductor and as a continuos layer over said substrate; and

at least one of a bond pad and external heat dissipating path coupled to said aluminum nitride layer.

2. The copper interconnect structure of claim 1, wherein said aluminum nitride layer is connected to said bond pad.

3. The copper interconnect structure of claim 1, wherein said aluminum nitride layer is connected to said external heat dissipating path.

4. The copper interconnect structure of claim 1, wherein said copper conductor is a copper plug formed on said conductive plug and further comprising a barrier layer formed between said conductive plug and said copper conductor.

5. The copper interconnect structure of claim 1, wherein said conductive plug is connected to an active area of said substrate.

6. The copper interconnect structure of claim 1, wherein said copper conductor is formed of elemental copper.

7. The copper interconnect structure of claim 1, wherein said aluminum nitride layer acts as a heat dissipation path for said copper conductor.

8. The copper interconnect structure of claim 1, wherein said aluminum nitride layer passivates said upper surface of said copper conductor.

9. The copper interconnect structure of claim 1, wherein said aluminum nitride layer has a thickness in the range of about 100Å to 1,000 Å.

10. The copper interconnect structure of claim 1, wherein said aluminum nitride layer has a thickness of approximately 300Å.

11. The copper interconnect structure of claim 1, wherein said conductive plug is formed of a material selected from the group consisting of polysilicon, cobalt, titanium nitride, tungsten, tungsten nitride, copper, aluminum, and platinum.

12. The copper interconnect structure of claim 4, wherein said barrier layer comprises a refractory metal compound.

13. The copper interconnect structure of claim 12, wherein said refractory metal compound is selected from the group consisting of refractory metal nitrides, refractory metal carbides, and refractory metal borides.

14. The copper interconnect structure of claim 1, wherein said copper conductor is part of a metalization layer.

15. An interconnect structure providing electrical connection on a semiconductor substrate, said interconnect structure comprising:

a conductive plug;

a conductor electrically coupled to said conductive plug; and

an aluminum nitride layer formed on an upper surface portion of said conductor, said aluminum nitride layer providing a heat dissipating path for said conductor.

16. The interconnect structure of claim 15, wherein said conductive plug is connected to an active area of said substrate.

17. The interconnect structure of claim 15, wherein said aluminum nitride layer has a thickness in the range of about 100Å to 1,000 Å.

18. A copper interconnect structure for an integrated circuit comprising:

a copper layer; and

an aluminum nitride layer formed on an upper surface portion of said copper layer.

19. The copper interconnect structure of claim 18 further comprising a conductor in contact with said copper layer.

20. The copper interconnect structure of claim 19 further comprising a conductive barrier layer formed between said copper layer and said conductor.

21. The copper interconnect structure of claim 19, wherein said copper layer forms at least part of a metalization layer of said integrated circuit.

22. A method of forming a copper interconnect structure providing electrical connection to a substrate, comprising the steps of:

forming a first contact opening into a first insulating layer of said substrate;

forming a conductive plug in said first contact opening;

forming a second insulating layer over said conductive plug and said first insulating layer;

forming a second contact opening in said second insulating layer;

forming a barrier layer in said second contact opening;

forming a copper conductor over said barrier layer; and

forming an aluminum nitride layer on an upper surface portion of said copper conductor, said aluminum nitride layer passifying said upper surface portion of said copper conductor.

23. The method of claim 22 further comprising the step of chemical mechanical polishing said copper layer and said barrier layer.

24. The method of claim 22 further comprising the step of cleaning said upper surface portion of said copper conductor prior to the formation of said aluminum nitride layer.

25. The method of claim 22, wherein said aluminum nitride layer is formed by deposition, to a thickness of approximately 300 Å.

26. The method of claim 22, wherein said step of forming said aluminum nitride layer includes a deposition process.

27. The method of claim 22, wherein said step of forming said aluminum nitride layer includes a sputtering process.

28. The method of claim 22, wherein said barrier layer is formed of a refractory metal compound, said refractory metal compound being selected from the group consisting of refractory metal nitrides, refractory metal carbides, and refractory metal borides.

29. A method of forming an interconnect structure providing electrical connection in a semiconductor device comprising:

forming a contact opening in an insulating layer of said device;

depositing a conductor within said contact opening; and

forming an aluminum nitride layer on an upper surface portion of said conductor, said aluminum nitride layer providing a heat dissipating path for said conductor.

30. The method of claim 29 further comprising the step of depositing a barrier layer in said contact opening and before said step of depositing said conductor.

31. The method of claim 29 further comprising the step of cleaning said upper surface portion of said conductor prior to the formation of said aluminum nitride layer.

32. The method of claim 29, wherein said aluminum nitride layer is formed by deposition, to a thickness of approximately 300 Å.

33. The method of claim 29, wherein said step of forming said aluminum nitride layer includes a deposition process.

34. The method of claim 29, wherein said step of forming said aluminum nitride layer includes a sputtering process.

35. The method of claim 29, wherein said conductor is selected from the group consisting of aluminum, gold, silver, tungsten, and copper.

36. An integrated circuit structure, comprising:

a substrate;

a transistor including a gate on said substrate and a source/drain region in said substrate disposed adjacent to said gate;

a copper interconnect structure providing electrical connection to at least one of said source/drain region, said copper interconnect structure comprising a conductive plug connected to said source/drain region of said substrate; a copper conductor provided on top of said conductive plug; and an aluminum nitride layer formed on an upper surface portion of said copper conductor.

37. The structure of claim 36 further comprising a barrier layer formed between said conductive plug and said copper conductor.

38. The structure of claim 36, wherein said aluminum nitride layer passivates said upper surface portion of said copper conductor.

39. The structure of claim 36, wherein said aluminum nitride layer acts as a heat dissipation path for said copper conductor.

40. The structure of claim 36, wherein said aluminum nitride layer is connected to a bond pad.

41. The structure of claim 36, wherein said aluminum nitride layer is connected to an external heat dissipating path.

42. The structure of claim 36, wherein said aluminum nitride layer has a thickness in the range of about 100Å to 1,000Å.

43. The structure of claim 36, wherein said aluminum nitride layer has a thickness of approximately 300Å.

44. The structure of claim 36, wherein said conductive plug is formed of a material selected from the group consisting of polysilicon, cobalt, titanium nitride, tungsten, tungsten nitride, copper, aluminum, and platinum.

45. The structure of claim 37, wherein said barrier layer comprises a refractory metal compound.

46. The structure of claim 45, wherein said refractory metal compound is selected from the group consisting of refractory metal nitrides, refractory metal carbides, and refractory metal borides.

47. An integrated circuit containing a copper interconnect structure, said copper interconnect structure comprising:

a copper layer; and

a layer of aluminum nitride formed on said copper layer.

48. The integrated circuit of claim 47 further comprising a conductive plug in contact with said copper layer.

49. The integrated circuit of claim 48 further comprising a conductive barrier layer formed between said copper layer and said conductive plug.

50. The integrated circuit of claim 47, wherein said copper layer forms at least part of a metalization layer of said integrated circuit.

51. The integrated circuit of claim 47, wherein said aluminum nitride layer acts as a heat dissipation path for said copper layer.

52. The integrated circuit of claim 47, wherein said aluminum nitride layer passivates said copper layer.

53. An integrated circuit containing an interconnect structure, said interconnect structure comprising:

a conductive layer; and

a layer of aluminum nitride formed on said conductive layer.

54. The integrated circuit of claim 53 further comprising a conductive plug in contact with said conductive layer.

55. The integrated circuit of claim 53, wherein said layer of aluminum nitride acts as a heat dissipating path.

56. The integrated circuit of claim 53 further comprising a conductive barrier layer formed between said conductive layer and said conductive plug.

57. The integrated circuit of claim 53, wherein said conductive layer forms at least part of a metalization layer of said integrated circuit.